

Trend Study 23-6-98

Study site name: Koosharem Canyon.

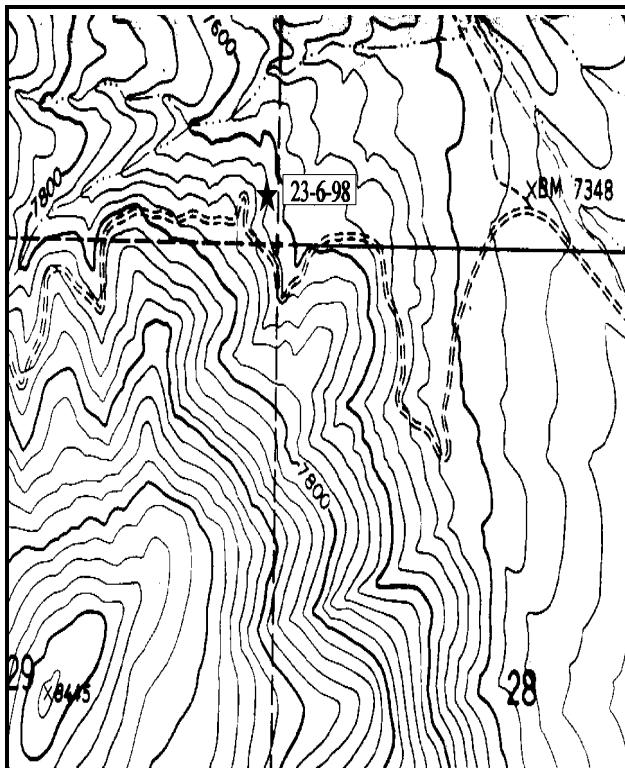
Range type: Mixed Mountain Brush.

Compass bearing: frequency baseline 180 degrees.

Footmark (first frame placement) 5 feet. Frequency belt placement; line 1 (11 & 95ft), line 2 (34ft), line 3 (71ft), line 4 (59ft).

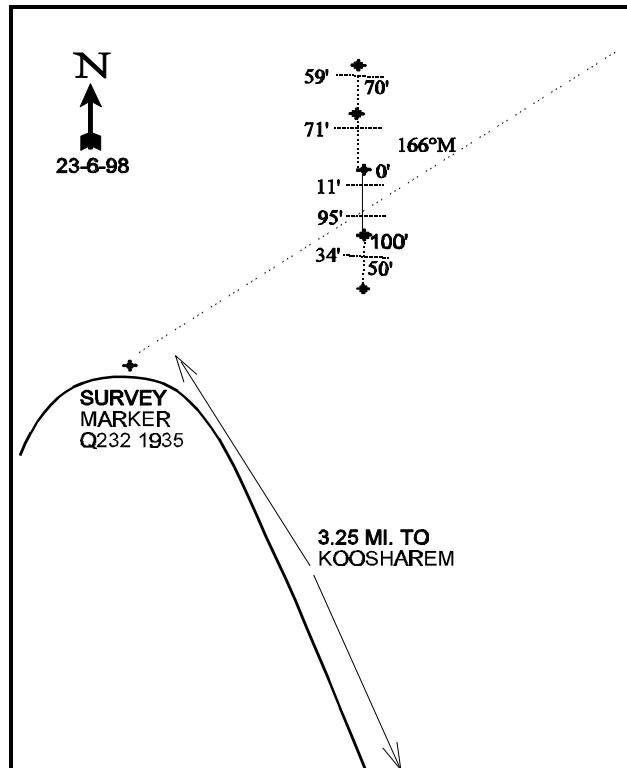
LOCATION DESCRIPTION

From the intersection next to the Koosharem LDS Ward Building go west 0.35 miles up the Koosharem Mountain Road. Bear right and go 0.05 miles to a fork. Take the left fork over a small bridge and proceed 1.85 miles to another fork. Turn left and go just over 1.0 mile to a hairpin turn that curves to the left. Stop at the apex of the curve. There is a benchmark here on the north side of the road. Take a bearing of 39 degrees and go 58 feet from the benchmark to find a short yellow rebar that marks a pellet group transect. From the first stake, the pellet group transect runs northeast (62-67 degrees) with stakes at intervals of about 50-60 feet. Count down 7 stakes, then go due north 50 feet to the baseline starting point. The 0-foot end of the baseline is marked by a steel rebar with browse tag #7042 attached. The baseline runs due south, crossing the pellet group transect.



Map Name: Koosharem, Utah

Township 26S, Range 1W, Section 20



Diagrammatic Sketch

UTM 4264699.016 N, 419545.308 E

DISCUSSION

Trend Study No. 23-6 (45-6)

The Koosharem Canyon study samples a moderately high elevation winter range on the east side of the Monroe Mountain herd unit. The site is located on a northeast, moderately steep slope (28%) at an elevation of 7,600 feet. The range type is mixed mountain brush with 10 browse species present. Wildlife use appears to be year-round. Data from pellet group counts on the site show an average over the last five years of 22 deer days use/acre (Jense et al. 1985). After this period, the deer days use/acre had gone up to 57 (Jense et al. 1991). Currently, the transect read in conjunction with the vegetation transect showed that deer days use/acre is now up to 63. Elk use is at 31 elk days use/acre and cattle at 5 days use/acre. Cattle graze this Forest Service land from June 1 to July 1. Under the current system, it is grazed two years in a row, then rested two years. Past grazing pressure appears to have been very heavy.

Ground cover is highly variable on the site. The vegetation and litter cover provides the majority of the ground cover. Soil movement is detectable on trails and shrub interspaces where rocks and pavement (24% of ground cover) and bare soil (24%) predominant. The soil is prone to erosion, as seen on some steeper areas nearby. The soil is rocky, but also contains a fair amount of organic matter. Soil textural analysis indicated that it was a clay loam with a neutral to slightly acidic pH (6.5). Effective rooting depth was moderate at just over 16 inches with a soil temperature of 59°F at 17 inches.

The hillside is dominated mainly by Wyoming big sagebrush and true mountain mahogany (*Cercocarpus montanus*). These two species alone contribute to 82% of the browse cover. Further up the hill and to the south, large mature Utah juniper and curlleaf mountain mahogany (*Cercocarpus ledifolius*) are more prominent. Both the sagebrush and the true mountain mahogany were initially vigorous and all available. There were a few decadent and less vigorous individuals, but both species had a healthy percentage of seedlings and young in 1985. Since then, mountain big sagebrush has shown many characteristics indicating a downward trend. These include: very low biotic potential, low percentage of plants in the young age class, high percent decadence (65% in 1991, currently 26%), and a high percentage of decadent plants classified as dying (43% in 1991). The downward trend for sagebrush has slowed down, but it is still going down. The large decrease in density for sagebrush is mostly because of the much larger sample size giving more accurate density estimates of shrub populations that have discontinuous and/or clumped distributions. Also, only about 21% of the drop in numbers can be explained by the number of dead in the population. True mountain mahogany, a long-lived species, is stable to slightly up. The oak and several other important browse species; Utah serviceberry, snowberry and Greenes rabbitbrush, show signs of light browsing. Pricklypear cactus, an increaser under cattle grazing, is fairly common but does not appear to be increasing rapidly.

Herbaceous vegetation is moderately abundant. The most abundant species except for mutton grass is sedge (*Carex spp.*) Muttongrass and bottlebrush squirreltail make up the balance of the most abundant grasses. These grass and grass-like species provide some spring and summer forage, but the community is lacking a desirable high-yielding herbaceous species. Bluebunch wheatgrass could fill this need, but it is presently in very low numbers and may not increase if spring cattle grazing continues at present levels. The perennial grass sum of nested frequency has decreased substantially since 1991.

There are a variety of forbs on the site, but density is very low and most are small and low-growing. Thus they are only a minor forage source. Some of the more common species that are utilized by deer are: longleaf phlox, scarlet globemallow, clover, dusty penstemon, and sulphur eriogonum. Utilization of these forbs appears to be light.

1985 APPARENT TREND ASSESSMENT

Soil trend on the site appears to be slightly downward as erosion continues on localized areas of the slope. An increase in basal vegetative cover from new growth of the grasses and forbs will help hold the soil in place. There does appear to be an increase in the grasses as they recover from past heavy grazing pressure. The key species may also be increasing; both the sagebrush and mountain mahogany have a high percentage of young plants. The upward vegetative trend is also shown by the good form, vigor and leader growth of the important browse species. However, encroachment of Gambel oak could become a problem in the future.

1991 TREND ASSESSMENT

The soil trend is considered slightly down because vegetative basal cover is down and percent bare ground is up to 29%. Serviceberry, mountain big sagebrush, and True mountain mahogany are all decreasing in density and increasing in rates of decadency. This would indicate a downward trend that should be watched closely. The majority of the grasses and forbs have shown increases in nested and quadrat frequency values, indicating an upward overall trend for the herbaceous understory.

TREND ASSESSMENT

soil - slightly down

browse - down

herbaceous understory - up

1998 TREND ASSESSMENT

The soil trend is considered stable with a slight decrease in percent bare soil with a corresponding decrease in herbaceous cover, essentially canceling out each trend. Trend for key browse is mixed, but because mountain big sagebrush contributes the majority of the browse cover (about 60%), it is still showing some indications of downward trend. Therefore, trend for browse is slightly down. The trend for herbaceous species is down, with nested frequency values for both grasses and forbs.

TREND ASSESSMENT

soil - stable

browse - slightly down for sagebrush

herbaceous understory - down for both the grasses and forbs

HERBACEOUS TRENDS --

Herd unit 23 , Study no: 6

T y p e	Species	Nested Frequency			Quadrat Frequency			Average Cover % '98
		'85	'91	'98	'85	'91	'98	
G	Agropyron smithii	a-	b24	a5	-	12	2	.03
G	Agropyron spicatum	a10	b49	a32	6	24	14	.83
G	Bouteloua gracilis	-	-	2	-	-	1	.00
G	Carex spp.	c221	b179	a109	81	63	39	2.02
G	Oryzopsis hymenoides	-	8	18	-	3	7	.70
G	Poa fendleriana	b176	c183	a138	75	68	53	8.00
G	Sitanion hystrich	a58	b110	a56	24	46	25	.98
Total Annual Grasses		0	0	0	0	0	0	0
Total Perennial Grasses		465	553	360	186	216	141	12.58

T y p e	Species	Nested Frequency			Quadrat Frequency			Average Cover % '98
		'85	'91	'98	'85	'91	'98	
F	<i>Agoseris glauca</i>	-	6	-	-	2	-	-
F	<i>Antennaria rosea</i>	1	3	-	1	1	-	-
F	<i>Androsace septentrionalis</i> (a)	-	-	14	-	-	8	.06
F	<i>Arabis</i> spp.	-	-	3	-	-	1	.00
F	<i>Astragalus lentiginosus</i>	6	7	5	4	3	2	.03
F	<i>Castilleja chromosa</i>	a-	b16	a-	-	6	-	-
F	<i>Calochortus nuttallii</i>	a-	b17	a-	-	9	-	-
F	<i>Crepis acuminata</i>	ab3	b13	a-	2	6	-	-
F	<i>Cryptantha humilis</i>	4	5	1	3	3	1	.03
F	<i>Descurainia</i> spp. (a)	-	-	2	-	-	1	.00
F	<i>Erigeron eatonii</i>	5	3	-	3	2	-	-
F	<i>Eriogonum racemosum</i>	-	-	4	-	-	2	.03
F	<i>Eriogonum umbellatum</i>	a5	b16	a3	3	9	1	.03
F	<i>Lomatium</i> spp.	a-	b12	a-	-	6	-	-
F	<i>Machaeranthera canescens</i>	5	-	-	2	-	-	-
F	<i>Penstemon comarrhenus</i>	6	-	-	3	-	-	-
F	<i>Penstemon</i> spp.	a-	a-	b8	-	-	4	.04
F	<i>Penstemon watsonii</i>	-	2	-	-	2	-	-
F	<i>Phlox longifolia</i>	b40	c69	a7	19	34	3	.01
F	<i>Potentilla gracilis</i>	-	-	1	-	-	1	.03
F	<i>Sphaeralcea coccinea</i>	b28	ab17	a5	13	8	3	.04
F	<i>Taraxacum officinale</i>	1	-	-	1	-	-	-
F	<i>Tragopogon dubius</i>	-	-	1	-	-	1	.00
F	<i>Trifolium</i> spp.	b21	c37	a2	11	19	1	.00
F	Unknown forb-perennial	5	-	-	3	-	-	-
F	<i>Wyethia amplexicaulis</i>	5	-	-	2	-	-	-
F	<i>Zigadenus paniculatus</i>	2	-	-	2	-	-	-
Total Annual Forbs		0	0	16	0	0	9	0.06
Total Perennial Forbs		137	223	40	72	110	20	0.28

Values with different subscript letters are significantly different at % = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 23 , Study no: 6

T y p e	Species	Strip Frequency '98	Average Cover % '98
B	<i>Amelanchier utahensis</i>	10	.36
B	<i>Artemisia tridentata wyomingensis</i>	91	17.00
B	<i>Cercocarpus ledifolius</i>	1	-
B	<i>Cercocarpus montanus</i>	44	6.59
B	<i>Chrysothamnus depressus</i>	5	.33
B	<i>Chrysothamnus greenei</i>	0	-
B	<i>Chrysothamnus viscidiflorus viscidiflorus</i>	6	.03
B	<i>Cowania mexicana stansburiana</i>	1	.15
B	<i>Echinocereus</i> spp.	2	.01
B	<i>Eriogonum microthecum</i>	15	.42
B	<i>Juniperus osteosperma</i>	3	.00
B	<i>Mahonia repens</i>	1	-
B	<i>Opuntia</i> spp.	21	.23
B	<i>Pinus edulis</i>	3	.18
B	<i>Purshia tridentata</i>	8	.16
B	<i>Quercus gambelii</i>	11	1.54
B	<i>Symphoricarpos oreophilus</i>	31	1.77
Total for Browse		152	28.80

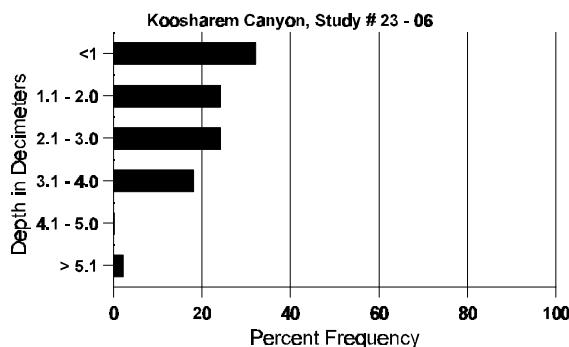
BASIC COVER --
Herd unit 23 , Study no: 6

Cover Type	Nested Frequency '98	Average Cover %		
		'85	'91	'98
Vegetation	299	9.25	5.25	37.37
Rock	191	11.25	10.25	9.54
Pavement	256	13.00	7.75	14.62
Litter	392	49.00	47.25	47.14
Cryptogams	1	0	.25	.00
Bare Ground	270	17.50	29.25	23.75

SOIL ANALYSIS DATA --
Herd Unit 23, Study # 06, Study Name: Koosharem Canyon

Effective rooting depth (inches)	Temp °F (depth)	pH	% sand	% silt	% clay	% OM	PPM P	PPM K	dS/m
16.2	58.6 (17.1)	6.5	40.0	25.4	34.6	4.2	26.8	243.2	.6

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 23 , Study no: 6

Type	Quadrat Frequency '98
Rabbit	50
Elk	10
Deer	45
Cattle	1

BROWSE CHARACTERISTICS --

Herd unit 23 , Study no: 6

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total									
		1	2	3	4	5	6	7	8	9	1	2	3	4												
<i>Amelanchier utahensis</i>																										
S	85	4	-	-	-	-	-	-	-	-	4	-	-	-	266		4									
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
Y	85	6	2	-	-	-	-	-	-	-	8	-	-	-	533		8									
	91	-	-	2	-	-	-	2	-	-	4	-	-	-	266		4									
	98	2	-	-	2	-	-	-	-	-	4	-	-	-	80		4									
M	85	-	1	-	-	-	-	-	-	-	1	-	-	-	66	13 9	1									
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0									
	98	2	1	-	3	2	-	-	-	-	8	-	-	-	160	25 21	8									
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
	91	-	-	-	-	-	1	-	-	-	1	-	-	-	66		1									
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
% Plants Showing		Moderate Use			Heavy Use			Poor Vigor			%Change															
'85		33%			00%			00%			-45%															
'91		00%			60%			00%			-28%															
'98		25%			00%			00%																		
Total Plants/Acre (excluding Dead & Seedlings)												'85	599	Dec:	0%											
												'91	332		20%											
												'98	240		0%											

A G R E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Artemisia tridentata wyomingensis																	
S	85	16	-	-	-	-	-	-	-	-	16	-	-	-	1066		16
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	3	-	-	-	-	-	-	-	-	2	-	1	-	60		3
Y	85	39	6	1	-	-	-	-	-	-	42	-	4	-	3066		46
	91	1	3	-	-	-	-	4	-	-	8	-	-	-	533		8
	98	8	5	-	3	-	-	-	-	-	15	-	1	-	320		16
M	85	25	19	-	-	-	-	-	-	-	43	-	1	-	2933	39 33	44
	91	4	9	-	4	4	1	-	-	-	20	1	1	-	1466	31 26	22
	98	65	33	2	2	6	-	-	-	-	109	1	-	-	2200	29 31	110
D	85	6	17	1	-	-	-	-	-	-	22	-	2	-	1600		24
	91	13	21	4	3	11	-	4	-	-	29	1	2	24	3733		56
	98	21	12	9	2	1	-	-	-	-	42	-	1	2	900		45
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	480		24
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>					
	'85	37%				02%			06%							-25%	
	'91	56%				06%			31%							-40%	
	'98	33%				06%			02%								
Total Plants/Acre (excluding Dead & Seedlings)												'85	7599	Dec:	21%		
												'91	5732		65%		
												'98	3420		26%		
Cercocarpus ledifolius																	
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-
	98	-	1	-	-	-	-	-	-	-	1	-	-	-	20	-	-
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>					
	'85	00%				00%			00%								
	'91	00%				00%			00%								
	'98	100%				00%			00%								
Total Plants/Acre (excluding Dead & Seedlings)												'85	0	Dec:	-		
												'91	0		-		
												'98	20		-		

A G R E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total									
		1	2	3	4	5	6	7	8	9	1	2	3	4												
Cercocarpus montanus																										
S	85	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1									
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
Y	85	6	4	-	-	-	-	-	-	-	10	-	-	-	666		10									
	91	-	1	-	-	1	2	1	-	-	5	-	-	-	333		5									
	98	3	2	-	4	-	-	-	-	-	9	-	-	-	180		9									
M	85	3	3	-	-	-	-	-	-	-	6	-	-	-	400	34 19	6									
	91	-	-	3	-	1	1	-	-	-	5	-	-	-	333	49 21	5									
	98	10	23	14	-	4	-	-	-	-	50	1	-	-	1020	36 40	51									
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
	98	-	4	2	-	-	-	-	-	-	5	-	-	1	120		6									
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	40		2									
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>														
'85			44%			00%			00%			-38%														
'91			30%			60%			00%			+50%														
'98			50%			24%			02%																	
Total Plants/Acre (excluding Dead & Seedlings)												'85	1066	Dec:	0%											
												'91	666		0%											
												'98	1320		9%											
Chrysothamnus depressus																										
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-									
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-									
	98	3	5	-	-	-	-	-	-	-	8	-	-	-	160	3 10	8									
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>														
'85			00%			00%			00%																	
'91			00%			00%			00%																	
'98			63%			00%			00%																	
Total Plants/Acre (excluding Dead & Seedlings)												'85	0	Dec:	-											
												'91	0		-											
												'98	160		-											

A G R E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Chrysanthemum greenei																	
Y	85	10	-	-	-	-	-	-	-	-	10	-	-	-	666		10
	91	-	-	1	-	-	-	-	-	-	1	-	-	-	66		1
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
M	85	14	-	-	-	-	-	-	-	-	14	-	-	-	933	5 5	14
	91	-	-	2	-	-	-	-	-	-	2	-	-	-	133	2 3	2
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	91	-	-	18	-	-	-	-	-	-	18	-	-	-	1200		18
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>%Change</u>					
	'85	00%			00%			00%				-13%					
	'91	00%			100%			00%									
	'98	00%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'85	1599	Dec:	0%		
												'91	1399		86%		
												'98	0		0%		
Chrysanthemum viscidiflorus viscidiflorus																	
S	85	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
Y	85	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
M	85	2	-	-	-	-	-	-	-	-	2	-	-	-	133	10 7	2
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0
	98	2	-	-	4	-	-	-	-	-	6	-	-	-	120	15 14	6
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	1	-	-	-	-	-	-	-	-	-	-	-	-	1	20	1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>%Change</u>					
	'85	00%			00%			00%									
	'91	00%			00%			00%									
	'98	00%			00%			14%									
Total Plants/Acre (excluding Dead & Seedlings)												'85	266	Dec:	0%		
												'91	0		0%		
												'98	140		14%		
Cowania mexicana stansburiana																	
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0
	98	2	-	-	-	-	-	-	-	-	2	-	-	-	40	21 22	2
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>%Change</u>					
	'85	00%			00%			00%									
	'91	00%			00%			00%									
	'98	00%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'85	0	Dec:	-		
												'91	0		-		
												'98	40		-		

A G R E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Echinocereus spp.																	
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	-	-	-	1	-	-	-	-	-	1	-	-	-	20		1
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	98	-	-	-	1	-	-	-	-	-	1	-	-	-	20	-	1
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>					
	'85																
		00%															
	'91																
	'98																
Total Plants/Acre (excluding Dead & Seedlings)												'85	0	Dec:	-		
													'91	0	-		
													'98	40	-		
Eriogonum microthecum																	
S	85	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	8	-	-	-	-	-	-	-	-	8	-	-	-	160		8
M	85	1	-	-	-	-	-	-	-	-	1	-	-	-	66	7	1
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	98	26	1	-	4	-	-	-	-	-	31	-	-	-	620	10	31
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>					
	'85																
		00%															
	'91																
	'98																
Total Plants/Acre (excluding Dead & Seedlings)												'85	66	Dec:	-		
													'91	0	-		
													'98	780	-		

A G E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Juniperus osteosperma																	
S	85	3	-	-	-	-	-	-	-	-	3	-	-	-	200		3
	91	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1
	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
Y	85	4	-	-	-	-	-	-	-	-	4	-	-	-	266		4
	91	1	1	-	-	-	-	-	-	-	2	-	-	-	133		2
	98	-	-	-	1	-	-	-	-	-	1	-	-	-	20		1
M	85	2	-	-	-	-	-	-	-	-	2	-	-	-	133	69 157	2
	91	1	-	-	1	-	-	-	-	1	3	-	-	-	200	71 43	3
	98	2	-	-	-	-	-	-	-	-	2	-	-	-	40	- -	2
D	85	-	1	-	-	-	-	-	-	-	1	-	-	-	66		1
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>					
	'85	14%				00%			00%							-28%	
	'91	20%				00%			00%							-82%	
	'98	00%				00%			00%								
Total Plants/Acre (excluding Dead & Seedlings)												'85	465	Dec:	14%		
												'91	333		0%		
												'98	60		0%		
Mahonia repens																	
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0
	98	3	-	-	-	-	-	-	-	-	3	-	-	-	60	4 7	3
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>					
	'85	00%				00%			00%								
	'91	00%				00%			00%								
	'98	00%				00%			00%								
Total Plants/Acre (excluding Dead & Seedlings)												'85	0	Dec:	-		
												'91	0		-		
												'98	60		-		

A G E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total						
		1	2	3	4	5	6	7	8	9	1	2	3	4									
Opuntia spp.																							
S	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1						
Y	85	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2						
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	98	5	-	-	-	-	-	-	-	-	3	-	2	-	100		5						
M	85	12	-	-	-	-	-	-	-	-	12	-	-	-	800	7 10	12						
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0						
	98	26	-	-	-	-	-	-	-	-	24	-	2	-	520	6 14	26						
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	91	6	4	-	-	-	-	-	-	-	2	-	-	8	666		10						
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>											
'85			00%			00%			00%			-29%											
'91			40%			00%			80%			- 7%											
'98			00%			00%			13%														
Total Plants/Acre (excluding Dead & Seedlings)										'85	933	Dec:	0%										
										'91	666		100%										
										'98	620		0%										
Pinus edulis																							
S	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	91	-	-	-	-	-	-	1	-	-	-	-	1	-	66		1						
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1						
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0						
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0						
	98	2	-	-	-	-	-	-	-	-	2	-	-	-	40	- -	2						
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>											
'85			00%			00%			00%														
'91			00%			00%			00%														
'98			00%			00%			00%														
Total Plants/Acre (excluding Dead & Seedlings)										'85	0	Dec:	-										
										'91	0		-										
										'98	60		-										

A G R E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total									
		1	2	3	4	5	6	7	8	9	1	2	3	4												
Purshia tridentata																										
Y	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
	98	1	1	-	-	-	-	-	-	-	2	-	-	-	40		2									
M	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0									
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0									
	98	3	-	1	-	2	1	-	-	-	7	-	-	-	140	24	35									
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>														
'85			00%			00%			00%																	
'91			00%			00%			00%																	
'98			33%			22%			00%																	
Total Plants/Acre (excluding Dead & Seedlings)												'85	0	Dec:	-											
												'91	0	-	-											
												'98	180	-	-											
Quercus gambelii																										
S	85	5	-	-	-	-	-	-	-	-	5	-	-	-	333		5									
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
	98	4	-	-	-	-	-	-	-	-	4	-	-	-	80		4									
Y	85	9	-	-	-	-	-	-	-	-	9	-	-	-	600		9									
	91	1	1	-	1	1	-	2	-	-	6	-	-	-	400		6									
	98	10	13	4	-	-	-	-	-	-	27	-	-	-	540		27									
M	85	2	-	-	-	-	-	-	-	-	2	-	-	-	133	42	2									
	91	-	2	1	-	1	-	-	-	-	4	-	-	-	266	59	4									
	98	8	10	-	-	-	-	-	-	-	17	-	-	-	360	35	18									
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
	98	1	2	-	-	-	-	-	-	-	3	-	-	-	60		3									
X	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	120		6									
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>														
'85			00%			00%			00%																	
'91			50%			10%			00%																	
'98			52%			08%			00%																	
Total Plants/Acre (excluding Dead & Seedlings)												'85	733	Dec:	0%											
												'91	666	-	0%											
												'98	960	-	6%											

A G E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total									
		1	2	3	4	5	6	7	8	9	1	2	3	4												
Symphoricarpos oreophilus																										
S	85	3	-	-	-	-	-	-	-	-	3	-	-	-	200		3									
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1									
Y	85	9	-	-	-	-	-	-	-	-	9	-	-	-	600		9									
	91	16	9	-	4	-	-	3	-	-	32	-	-	-	2133		32									
	98	21	3	-	5	-	-	-	-	-	29	-	-	-	580		29									
M	85	8	-	-	-	-	-	-	-	-	8	-	-	-	533	14 10	8									
	91	-	-	1	-	1	-	1	-	-	3	-	-	-	200	11 11	3									
	98	33	10	-	4	-	-	-	-	-	46	1	-	-	940	12 19	47									
D	85	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0									
	91	-	-	-	-	-	-	2	-	-	2	-	-	-	133		2									
	98	-	-	-	1	-	-	-	-	-	1	-	-	-	20		1									
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>														
'85			00%			00%			00%			+54%														
'91			27%			03%			00%			-38%														
'98			17%			00%			00%																	
Total Plants/Acre (excluding Dead & Seedlings)												'85	1133	Dec:	0%											
												'91	2466		5%											
												'98	1540		1%											